Wireless LAN Access Point

User's Manual

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Rev. 01

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Welcome

This User's Manual contains information on how to install and configure your Wireless LAN Access Point.

A network is more than one computer that are connected together such that sharing of resources, files and peripheral devices, such as printers, is made easy. A local area network (LAN) is a network that connectivity is accessible only within a relatively limited area. Wireless LAN is a local area network that connections among computing devices are realized via radio technology.

A wireless LAN allows you to communicate with other computers without having the trouble running cables or wires used in traditional networking. Moreover, by ways of the Wireless LAN Access Point, computers equipped with wireless LAN cards (wireless clients) can share resources with computers on existing wired LAN, forming an infrastructure wireless network.

The Access Points are capable of being used in a wide variety of applications, and offer the following functions:

- **Stand-alone wireless Intranet**: a relay station that increases communication ranges among wireless clients.
- **Bridge to Ethernet**: Establishing communication capability between Wireless and Ethernet Interfaces to establish an Intranet.

Contents

Chapter 1 Introduction 1

Introduction to Networks and LANs 1
Introduction to Wireless LANs and Access Points 1
Stand-Alone Wireless Network 2
Infrastructure Network 2
IP address and TCP/IP 3
Introduction to Access Point Configuration Utility 4
Access Point Configuration Utility 4

Chapter 2 Installing the Access Point Hardware 5

Item Checklist 5
Identifying External Components on the Access Point 6
Access Point Status LEDs 7
Connecting the Wireless LAN Access Point 8
The Antennas on the Wireless Access Point 10
Mounting the Wireless LAN Access Point 11

Chapter 3 Installing the Access Point Configuration Utility 13

System Requirement 13
Installing the Access Point Configuration Utility 13

Chapter 4 Configuring the Access Point 17

Access Point Default Settings 17
Starting the Access Point Configuration Utility 18
Setting the IP Address of the Access Point 19
Configuring the Access Point 23
File Menu 24
Configuration Menu 25
Information Menu 37
Commands Menu 42
Window Menu 44
Help 44

Chapter 5 Uninstalling the Access Point Configuration Utility 45

Uninstalling the Access Point Configuration Utility 45

Chapter 6 Application of the Access point (Access Point Mode Only) 49

Case 1: Home Network with IP Sharing Device and Access Point. 49
Case 2: Home Network with Access Point. 50
Case 3: Office Network with Ethernet and Access Point. 51

Chapter 7 Troubleshooting 53

Cannot Establish Wireless Link to Access Point 53
Cannot Connect to Another Wireless Client via Access Point 54

Appendix A Specifications 55

Software 55
Hardware 58

Appendix B Glossary 61

Appendix C Regulatory Compliance 65

FCC Compliance Statement 65
FCC Rules and Regulations - Part 15C 65
FCC Radiation Exposure Statement 66

Screw Template 67

Table of Figures

Figure 2-1 External Components on the Access Point 6
Figure 2-2 Connection Diagram 9
Figure 4-1 Set up the IP Address for Access Point 20
Figure 4-2 Connect to Access Point 21
Figure 4-3 Download Changes 22
Figure 4-4 File Menu 24
Figure 4-5 Access Point Settings Window 26
Figure 4-6 Advanced Settings Window 29
Figure 4-7 Wireless Bridge Environment 31
Figure 4-8 Building To Building Environment 32
Figure 4-9 Encryption Settings Window 34
Figure 4-10 Authorized MAC Address Window 35
Figure 4-11 Community Configuration Window 36
Figure 4-12 Statistics Window 39
Figure 4-13 Connected Wireless Devices Window 40
Figure 4-14 View Log Records Window 41
Figure 4-15 Firmware Upgrade Window 43

Chapter 1 Introduction

Introduction to Networks and LANs

A network is a group of computers and associated devices that are powered to communicate with one another by either permanent connections such as cables, or temporary connections made through telephone or other communication links. A network can be small within a local area network (LAN) consisting of a few computers, printers, and other devices, or it can be distributed over a vast geographic area (called a wide area network, WAN) consisting of all kinds of computing devices.

Enriched by networking, sharing resources such as printers and files is just a trigger away.

Introduction to Wireless LANs and Access Points

A wireless LAN is a network that utilizes radio signals to send and receive data between individual devices within a local area. Wireless LANs are often equipped in office or factory settings where users must carry portable computing devices from place to place. Due to the convenience brought by wireless technology, Wireless LANs are getting popular ever more in a home environment.

In general, a Wireless LAN serves the same purpose as a wired LAN does, but without the wire! Devices are linked together by radio waves in the air.

Furthermore, with the assistance of Wireless LAN Access Point, wireless LAN can be transparently connected to wired networks.

The Wireless LAN Access Point provides connectivity between wireless clients and Ethernet (wired) clients. The wireless functionality of Access Point complies with the IEEE 802.11b standard, making communication among all wireless clients that meet this standard, even from different vendors.

Stand-Alone Wireless Network

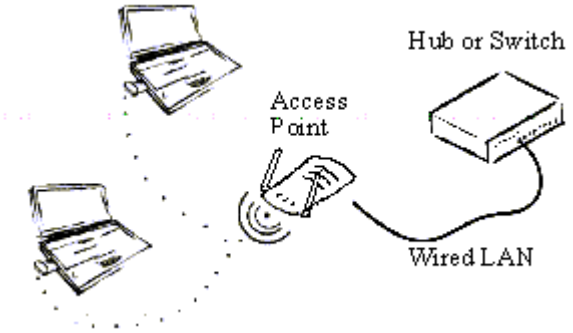
A stand-alone wireless network, namely without any wired network as its backbone, is the simplest application scenario an Access Point provides. In this scenario, the Access Point acts as a relay between wireless clients. This enables the transfer of information among all computers within the Access Point coverage area.

To communicate with the Access Point and other computers in the network, the Access Point and all computers in the network must have the same Identity, called Service Set Identity (SSID). While an Access Point is present, its relay capability effectively doubles the communication distance between two computers.

Infrastructure Network

Infrastructure network, as its name states, is established when the Access Point is attached to the Ethernet. In an infrastructure network, the Access Point connects wireless clients to a wired network. This enables the wireless clients to access all available resources and peripherals on the wired network.

Multiple Access Points can be installed to extend the wireless service coverage area for seamless wireless access. Within an extended service area, all Access Points and wireless clients must have the same Service Set Identity (SSID). Roaming among different Access Points is controlled automatically to maintain the wireless connectivity at all times.



IP address and TCP/IP

IP (Internet Protocol) is nowadays the most widely used addressing protocol. Internet, a network built on IP, has become the standard for networking all over the world. On an IP network (e.g. Internet), every device needs an address called IP address (for example, 192.168.100.1) to identify itself. Moreover, to carry out all different kinds of communication applications, a large protocol suite called TCP/IP is pervasively used over the IP network.

The Wireless LAN Access Point uses TCP/IP to communicate with clients on both wired and wireless networks. Every Access Point requires one unique IP address to talk to devices on the same network.

You can either manually assign a fixed IP address to an Access Point, or you can have Access Points automatically get an IP address from some DHCP server on your network.

Introduction to Access Point Configuration Utility

Access Point Configuration Utility

Access Point Configuration Utility is a proprietary executable program that provides an ease-of-use management capability over one or more Access Points. When Access Point Configuration Utility is installed on a computer in the network, you can change all operating parameters of any Access Point remotely from that computer. The Access Point Configuration Utility enables you to configure and monitor the operational parameters of your network.

You can install the Access Point Configuration Utility on as many computers in your network as you want, either wired or wireless. The choice for a wireless or wired computer depends on your preferences and your network configuration.

Chapter 2 Installing the Access Point Hardware

It is recommended that you install the Access Point first before you install any wireless LAN cards. Or re-insert your wireless LAN cards after you install the Access Point.

Item Checklist

Unpack the package and inspect closely to make sure the following components are present:

- Access Point
- Switch Adapter & Power Cord
- Access Point Configuration Utility CD, containing Access Point Configuration Utility, User's Manual and Help file.

Identifying External Components on the Access Point

Component	Description
• 3 LEDs	Status/Function.
• DC power socket	3.3V/5V DC power input
• RJ-45/10Base-T connector	Network interface connection

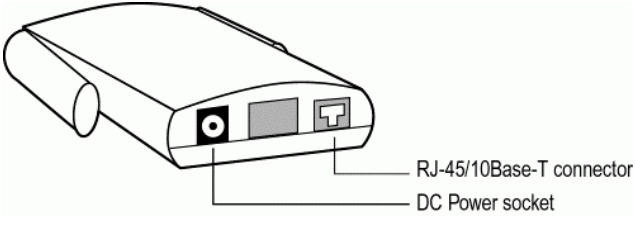


Figure 2-1 External Components on the Access Point

Access Point Status LEDs

When the Access Point is powered on, the Access Point will perform its startup diagnostics and initialization. After a few seconds, the LEDs will display the operating mode of the Access Point.

Three LEDs on the Access Point indicate the connection and data transfer operation status of the Access Point. LEDs are described in the table below, starting from the left side.

LED	Color	State	Description
ACT	Green	Blinking	Access Point is transmitting or receiving data.
PWR	Red	On	Access Point is connected to 3.3V/5V DC Power.
ETHER	Green	On	Access Point is attached to an Ethernet hub or switch through the RJ-45 port.

Connecting the Wireless LAN Access Point

1. Making Power Connection

Connect the single DC output connector of the power adapter to the DC **Power** jack on the rear panel of the Access Point. Then connect the supplied power cord to the AC power adapter and the other end to an AC outlet.

Warning: The output rating of the power adapter is 3.3V/5V DC, 4A/2.8A. Permanent damage may be caused by improper use of power adapters other than the adapter provided.

2. Making Ethernet Connection

The RJ-45 Ethernet connector jack on the Access Point is to connect the Access Point to an Ethernet Hub/Switch that is part of your wired network. Connect one end of the RJ-45 UTP cable to the Access Point and the other end to any jack of the hub that is the same as those for Ethernet PC.

Note: If you want to connect the Access Point directly to the Ethernet jack of your PC, a reversed UTP wire shall be used instead of normal UTP cable.

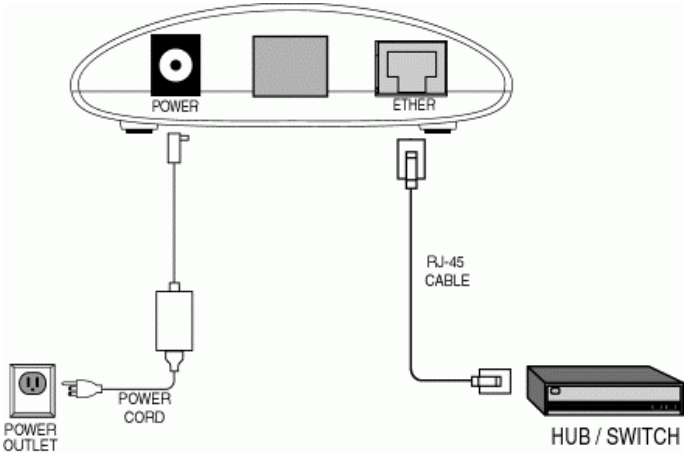
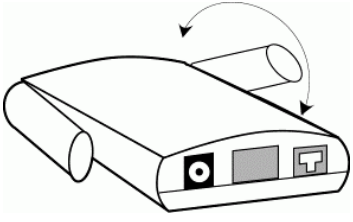


Figure 2-2 Connection Diagram

The Antennas on the Wireless Access Point

The Access Point comes with two powerful antennas. You can rotate any of these antennas, from 0 to 180 degrees to adjust its range and the connection quality with wireless clients.

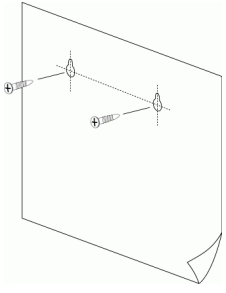
Note: Do not rotate either of the antennas more than 180 degrees, otherwise permanent damage may be caused.



Mounting the Wireless LAN Access Point

You may mount the Access Point to a wall as required. To mount the Access Point, you should have appropriate screws handy. For your convenience, a screw template is supplied as a separate sheet at the end of this manual. Print it out to help you drill the mounting screw holes:

1. Position the drill sheet to a desired location of the wall; fix the sheet with glue or tape.
2. Drill mounting holes through the slots of the template.
3. Remove the template from the wall and then attach the screws to the holes.
4. Slide the Access Point onto the screws until it locks in place.



Chapter 3 Installing the Access Point Configuration Utility

In order to customize configuration of your Access Point, the window-based program is provided in the Software Utility CD. You can install the Access Point Configuration Utility on as many computers in your network as you want, either wired or wireless. The choice for a wireless or wired computer depends on your preferences and your network configuration.

System Requirement

To run the utility smoothly, your computer must meet the following minimum requirements:

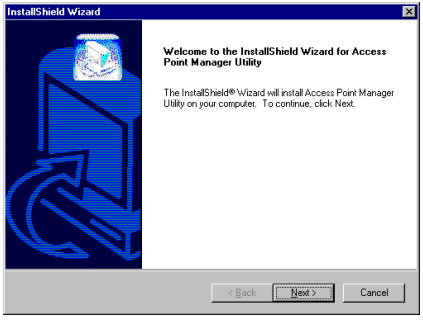
- Windows 98(SE)/ME/2000
- 32MB RAM, additional memory recommended

Installing the Access Point Configuration Utility

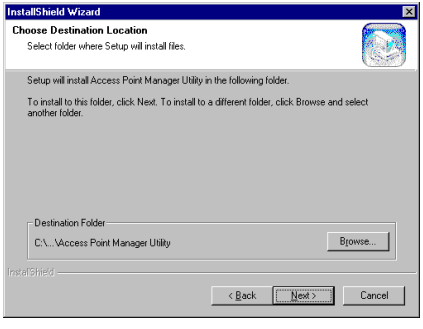
To install the Access Point Configuration Utility:

1. Insert the Access Point Configuration Utility CD into the CD-ROM.

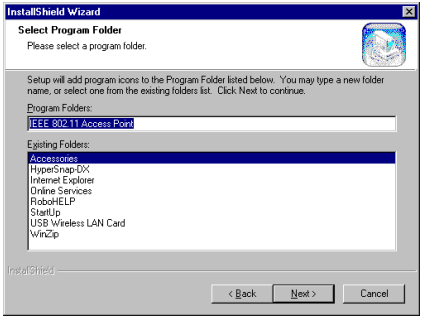
2. Run **Setup.exe** from the **Utility** folder of the Access Point Configuration Utility CD. When the welcome screen pops up, click **Next**.


InstallShield Wizard
Welcome to the InstallShield Wizard for Access Point Manager Utility
The InstallShield® Wizard will install Access Point Manager Utility on your computer. To continue, click Next.
< Back
Next >
Cancel

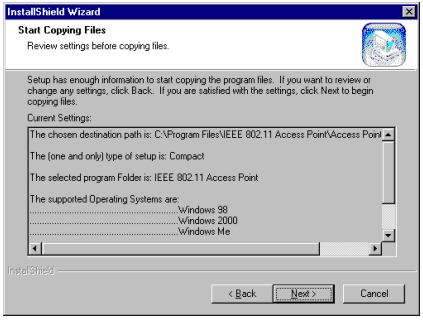
3. To install the software to the default destination folder, click **Next**. If you are to install to a different folder, click **Browse**, select another folder, and then click **Next**.


InstallShield Wizard
Choose Destination Location
Select folder where Setup will install files.
Setup will install Access Point Manager Utility in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\...\Access Point Manager Utility
Browse...
InstallShield
< Back
Next >
Cancel

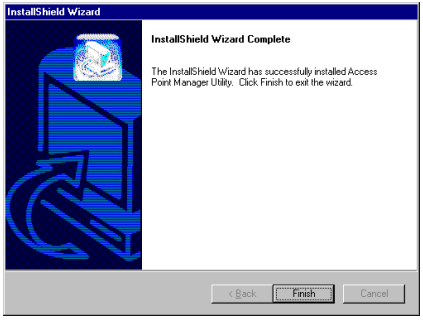
4. Click **Next** to continue.



5. If the settings listed are correct, click **Next** to begin copying files. Otherwise, click **Back** to modify your settings.


InstallShield Wizard
Start Copying Files
Review settings before copying files.
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.
Current Settings:
The chosen destination path is: C:\Program Files\IEEE 802.11 Access Point\Access Point
The (one and only) type of setup is: Compact
The selected program Folder is: IEEE 802.11 Access Point
The supported Operating Systems are:
Windows 98
Windows 2000
Windows Me
InstallShield
< Back
Next >
Cancel

6. After Windows copies the Setup files from the Access Point Configuration Utility CD, click **Finish**.


InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Access Point Manager Utility. Click Finish to exit the wizard.
< Back
Finish
Cancel

Chapter 4 Configuring the Access Point

Access Point Default Settings

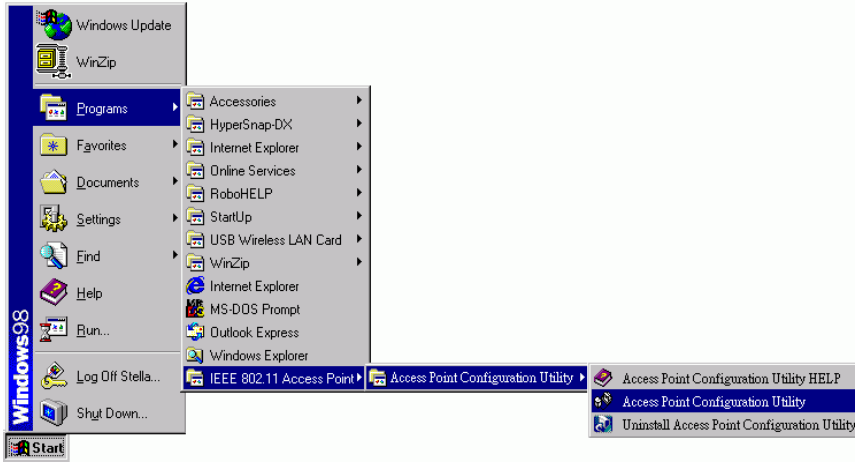
Your Access Point is supplied with operating firmware pre-installed at the factory. After making all the proper connections, when you power on the AP, Access Point will use the factory settings shown in the table below:

Access Point Parameter	Factory Setting
IP Address	192.168.100.1
Subnet Mask	255.255.255.0
Community (Access Password)	**public** (Access right: read only) **admin** (Access right: read and write)
RF-Channel Number	7
SSID	IEEE 802.11 LAN (notice the spaces between E and 8, 1 and L)
MAC Address	MAC address of network device
Encryption	Encryption disabled

Note: To configure the Access Point from a wireless client, if you have previously changed some settings of your wireless LAN card, you must make sure that the SSID and the Encryption (Wired Equivalent Privacy) settings of your wireless LAN interface are exactly identical to the default values above.

Starting the Access Point Configuration Utility

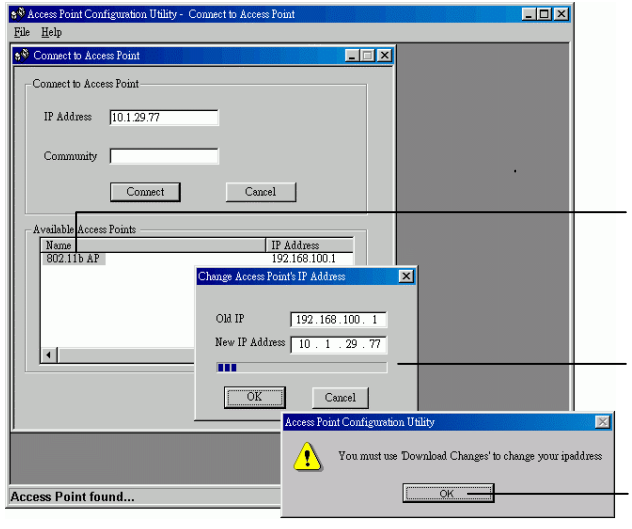
To start the Access Point Configuration Utility, click the Windows **Start** button, point to **Programs**, **IEEE 802.11 Access Point** and then click **Access Point Configuration Utility**.



Setting the IP Address of the Access Point

To start initial configuration of the AP, the first step is to set up its IP Address. This procedure can be done through the Ethernet/wireless port by using the Access Point Configuration Utility.

1. Open the Access Point Configuration Utility. The **Connect to Access Point** window opens automatically. In this window, you can see the Access Point(s) in the **Available Access Points** column.
2. Double-click the Access Point which you want to configure, then the **Change Access Point's IP Address** window pops up.
3. Type the **New IP Address** which is suitable for the communication between the AP and the PC which executes the Access Point Configuration Utility. Then click the **OK** button.
4. A warning message appears that "You must use '**Download Changes**' to change your IP address permanently", just click **OK**.



1. Open the **Access Point Configuration Utility**.
2. Double-click the AP you want to set up IP address.
3. Type the **New IP Address** as required and then click **OK**.
4. When a message warns you to download changes appears, click **OK**.

Figure 4-1 Set up the IP Address for Access Point

5. You will return to the **Connect to Access Point** window. Before you perform the task of download changes, you should connect to the target Access Point as follows:
   a. In the **Available Access Points** column, double-click the target Access Point whose IP address you just modified.
   b. In the **Community** field, type the Administrator community name: **admin** (case-sensitive). Note that you should not use user community name of **public** otherwise you are not allowed to download changes.
   c. Then click the **Connect** button.

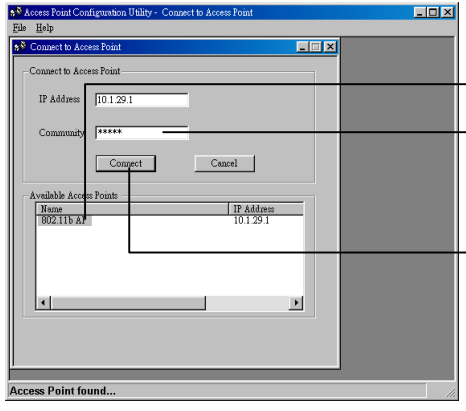


Figure 4-2 Connect to Access Point

6. After connection is established, select **File** > **Download Changes**. When "Do you want to Download Configuration? message appears, click **Yes**. When download is finished, you'll see "Download configuration done" message on the status bar. Now you have assigned a permanent IP address to this AP.

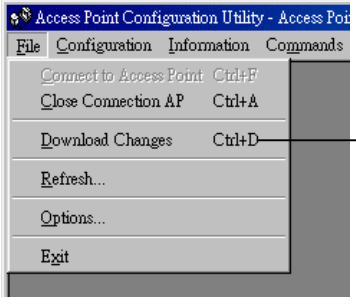


Figure 4-3 Download Changes

Configuring the Access Point

After changing the IP address of the AP, you may proceed with configuration procedures. Start as follows:

1. Launch the Access Point Configuration Utility.
2. Within the utility appears the **Connect to Access Point** window. In the **Available Access Points** column, double-click the target Access Point which you want to configure.
3. In the **Community** field, type the community name and then click the **Connect** button. The **Community** means the password that authorizes you to configure the AP. Two levels of access right are provided:
   - User Community with name of **public**. Read-only access right. A user is not authorized to make changes. If connect to the AP using **public**, some of the menu options are not available. Download changes are not allowed either.
   - Administrator Community with name of **admin**. Read and write access right. An administrator is authorized to make changes and download the new setting to the firmware.

When the connection has been successfully established, the left side of the status bar shows the message "Get Configuration done" while the right side appears the **IP Address** of the connected Access Point. At the same time, the **Access Point Settings** window pops up within the utility window.

From now on, you can start to customize the AP settings. The menu bar consists of a couple of menu items: **File**, **Configuration**, **Information**, **Commands**, **Window** and **Help**. Refer to corresponding sections describing these items.

File Menu

The File menu contains the following enabled submenus:

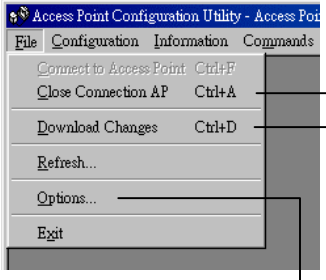


Figure 4-4 File Menu

Close Connection AP - Terminates the connection with the AP.

Download Changes - When the desired values of the parameters have been set, you can download the changes (save the changes) to the AP by selecting this submenu.

Options - Defines the polling interval that the AP Configuration Utility polls the Access Point in order to update the statistics and the Associated Stations List.

Configuration Menu

Configuration menu allows you to set parameters for your AP. This menu encompass these items to be discussed:

- Access Point Setting
- Advanced Settings
- Encryption Settings
- Authorized MAC Addresses
- Community Configuration
- Enable Network Management Log

Access Point Settings

As soon as the connection has been established, you are firstly directed to the Access Point Settings window. It allows you to view or start to set the basic parameters for the AP.

AP Name: The name used for identifying the AP.

ESSID (Extended Service Set Identity): The name used for identifying the WLAN.

Channel: :The radio frequency used for communication. Select a channel out of the available cannels or used the default channel.

Regulatory Domain: Displays the regulatory domain depends on your geographic location.

MAC Address: Displays the MAC address of the AP.

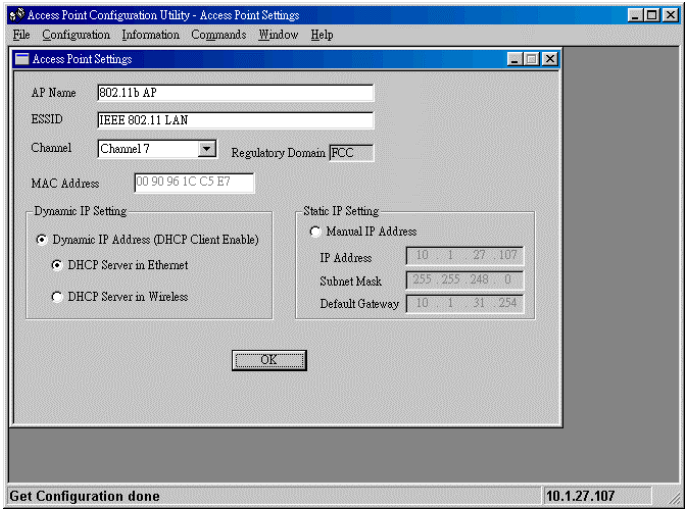


Figure 4-5 Access Point Settings Window

Dynamic/Static IP Settings

The AP can be manually specified a static IP address or get a dynamic IP address from the network DHCP server.

After you change the IP in initial step, when you enter this panel, the static **IP Address** and the **Subnet Mask** are displayed in **Manual IP Address** section. You can set the default gateway in **Default Gateway** field.

To have the AP act as a DHCP client, select the **Dynamic IP Address (DHCP Client Enable)** option and select whether to use the **DHCP Server in Ethernet** or **Wireless**, which is the interface that determines the DHCP server.

After setup, click **OK** and then select **File** > **Download Changes** to save changes. When download configuraton is done, the **IP Address**, **Subnet Mask** and the **Default Gateway** assigned by network DHCP server are shown.

Advanced Settings

Advance Settings allow you to set up advanced parameters described as follows.

Auto Rate Fall Back: If enabled, the AP will automatically adjust the transfer speed for best performance and greatest range.

IP Filtering : If enabled, only the IP protocol packets will pass through the WLAN and any other protocol will be filtered out.

SSID Broadcasting: If enabled, the Wireless Station with ESSID set to "any" can connect to this Access Point. If this option is disabled, this Access Point just only accept stations whose ESSID are the same as this AP connection.

Fragmentation Threshold: The fragmentation threshold, which is specified in bytes, determines whether packets will be fragmented and at what size. On an 802.11 wireless LAN, packets exceed the fragmentation threshold are fragmented, i.e., split into, smaller units suitable for the circuit size. Packets smaller than the specified fragmentation threshold value are not fragmented.

RTS (Request to Send) Threshold: When set (in bytes), it specifies the packet size beyond which the Wireless LAN Card invokes its RTS/CTS mechanism. Packets that exceed the specified RTS threshold trigger the RTS/CTS mechanism. The NIC transmits smaller packets without using RTS/CTS.

Authentication Type: Select the authentication type from **Open System**, **Shared Key** or **Both**. The authentication type must be the same on the Access Point and the Wireless Stations to be able to communicate.

Note: The Authentication type must be the same on the wireless client and on the Access Point. All shared keys on the Wireless Station must be the same as those on the Access Point with which the client station is associated.

Rates (Mbps): If **Auto Rate Fall Back** option is enabled, the AP will automatically adjust the transfer speed to the rates you checked as **Supported**. **Basic** means only the Wireless Stations with rates you checked can connect to this Access Point.

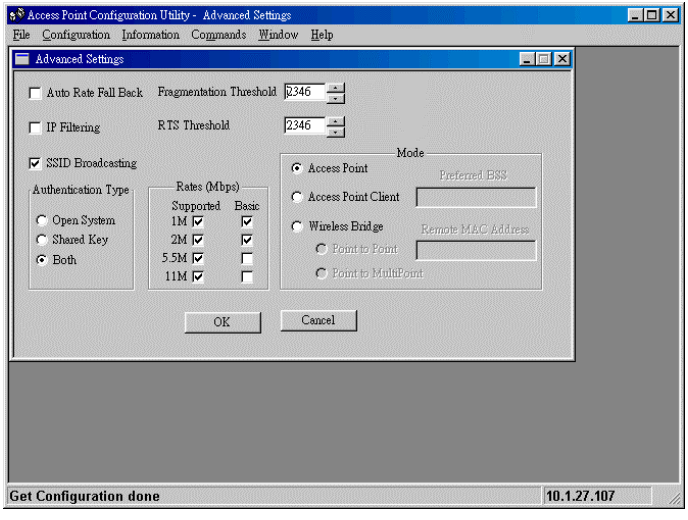


Figure 4-6 Advanced Settings Window

Mode (Operation Mode)

Access Point: This mode provides access from Wireless Stations to wired LANs and from wired LANs to Wireless Stations. Furthermore, Wireless Stations within the range of the Access Point device may communicate with each other via the Access Point.

Access Point Client: This mode allows the connection of one or more remote LANs with a central LAN, creating thus an extended single virtual LAN. In this way, any Station from the remote LAN can successfully communicate with any Station of the central LAN, as if all of them belonged to the same physical LAN. Wireless Stations can't be associated with the Access Point Client. The Access Point conducts the designated traffic to the appropriate wired or Wireless Station. User needs to define the **Preferred BSS** which corresponds to the MAC Address of the desired Access Point.

Wireless Bridge: This mode allows two types of connections:

I) **Point to Point:** The Wireless Bridge can communicate with a specific Remote MAC Address. User needs to define the **Remote MAC Address**, which corresponds to the MAC address of the Wireless Bridge of the Remote LAN.

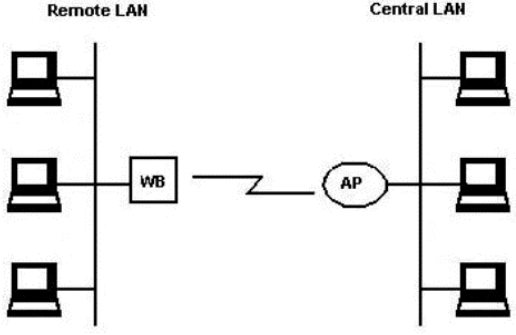


Figure 4-7 Wireless Bridge Environment

II) Point to Multipoint: The Wireless Bridge can communicate with any Wireless Bridge available in the same channel.

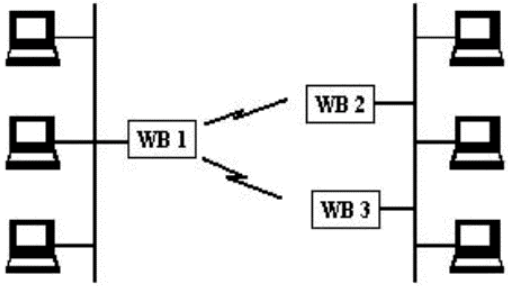


Figure 4-8 Building To Building Environment

Encryption Settings

This window allows you to view or set new WEP values to activate or deactivate the WEP (Wired Equivalent Privacy) functionality. WEP is an authentication algorithm which protects authorized Wireless LAN users against eavesdropping.

If you are going to enable WEP, select whether to use **64-bit WEP** or **128-bit WEP** as the encryption algorithm. Then enter the WEP keys in **Key 1-4** fields. WEP keys must be comprised of the hexadecimal characters (0-9, A-F, and a-f) and must contain 10 characters for 64-bit WEP Keys or 26 characters for 128-bit WEP keys.

Note: All Wireless Stations must use the same encryption algorithm and the same Key value (same key position in its key table) to be able decrypt the data.

In the **Default Key** field, select one of the four keys to encrypt the data before being transmitted. All stations, including this AP, always transmit data encrypted using the Default Key. The key number (1,2,3,4) is also transmitted. The receiving station will use the key number to determine which key to use for decryption. If the key value does not match with the transmitting station, the decryption will fail. To ensure successful decryption, have your Wireless Stations set identical key tables.

To enable the settings, click the **Set** button.

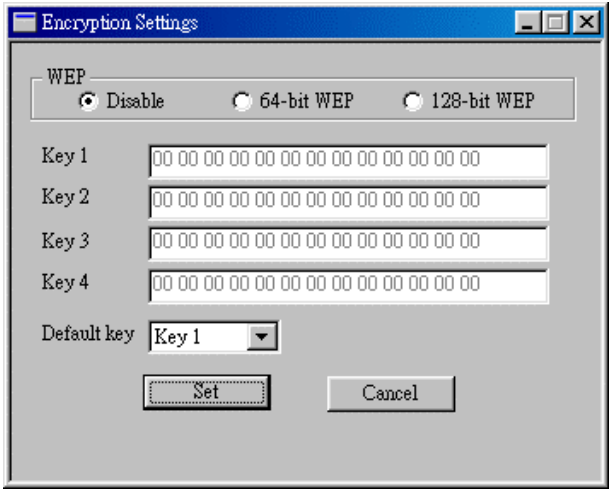


Figure 4-9 Encryption Settings Window

Authorized MAC Address

This panel allows you to view or edit the authorized MAC address list. You can determine which client is authorized to associate with this AP by adding its MAC address to this **Authorized MAC Address** list. If left to blank, all the Wireless Stations are capable of connecting to the network via this Access Point.

The button of **Add**, **Modify**, **Delete** and **Clear** are used to edit the list. For your convenience, you can pre-define the MAC addresses in a text file (*.txt) and click the **Load File** button to load these addresses from this text file. To enable the settings, click the **Set** button. Clicking **Set** will prompt you with the message: “Do you want to Download these Mac Addresses?”. Click **Yes** to start the download.

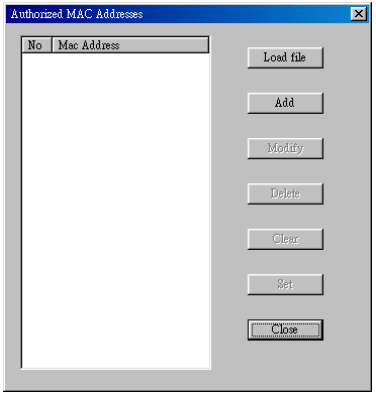


Figure 4-10 Authorized MAC Address Window

Community Configuration

This option is used when the Administrator wishes to change the community name for **Administrator Community** or the **User Community**. For each community, enter the new password in the **New Community** filed and re-enter the value in **Confirm Community** field. Then click **Apply** to enable changes. If successful, "Password changed" message will appear. Note that both passwords are case-sensitive.

Figure 4-11 Community Configuration Window

Enable Network Management Log

This option is used to enable or disable Network Management Log, which are messages displayed by selecting **Information** >**View Log Records**. Log keeps a running records of the AP operation. The information provided are useful for Administrators when troubleshooting.

Information Menu

Information menu includes three submenus that allow you to view the Statistics, Connected Wireless Devices and View Log Records.

Statistics

Wireless and Ethernet statistics are displayed in this window. The parameters of these statistics and the definitions are described as below.

Wireless Statistics

- **Unicast Transmitted Packets:** The number of unicast packets successfully transmitted.
- **Broadcast Transmitted Packets:** The number of broadcast packets transmitted.
- **Multicast Transmitted Packets:** The number of multicast packets transmitted.
- **Unicast Received Packets:** The number of unicast packets that were successfully received.
- **Broadcast Received Packets:** The number of broadcast packets that were successfully received.
- **Multicast Received Packets:** The number of multicast packets that were successfully received.

Ethernet Statistics

Received Packets

- **Total Bytes:** The number of bytes in frames that were received.
- **Total Packets:** Total number of received packets.
- **Packet CRC Errors:** The number of packets with CRC Errors.
- **Multicast Packets:** The number of multicast packets that were successfully received.

Transmitted Packets

- **Total Bytes:** The number of bytes in frames that were transmitted.
- **Total Packets:** Total number of transmitted packets.
- **Packet CRC Errors:** The number of packets with CRC Errors.
- **Multicast Packets:** The number of multicast packets transmitted.

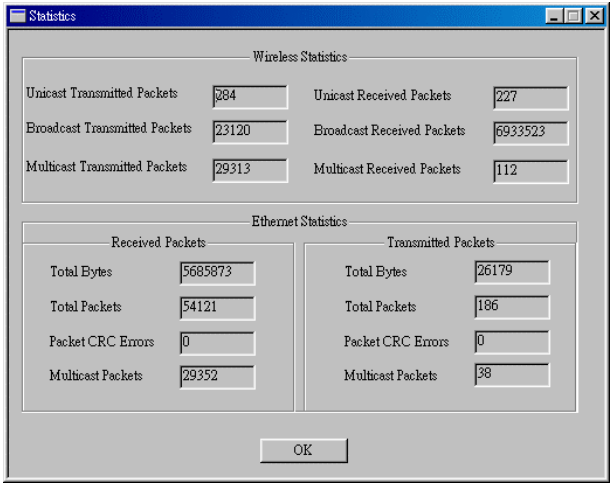


Figure 4-12 Statistics Window

Connected Wireless Devices

This window allows you to view the MAC Addresses of the Wireless Stations connected to the AP.

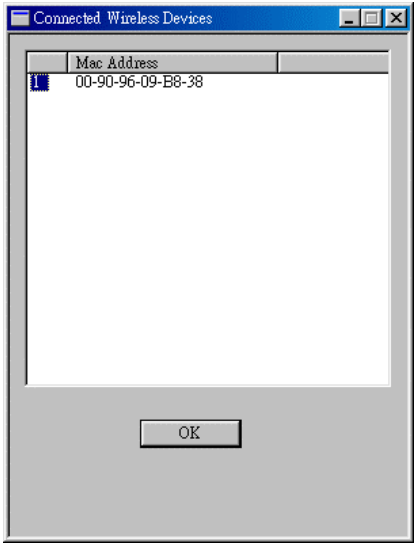


Figure 4-13 Connected Wireless Devices Window

View Log Records

This window provides the information for log records. After viewing the log, you may click the **Clear** button bar to clear the records.

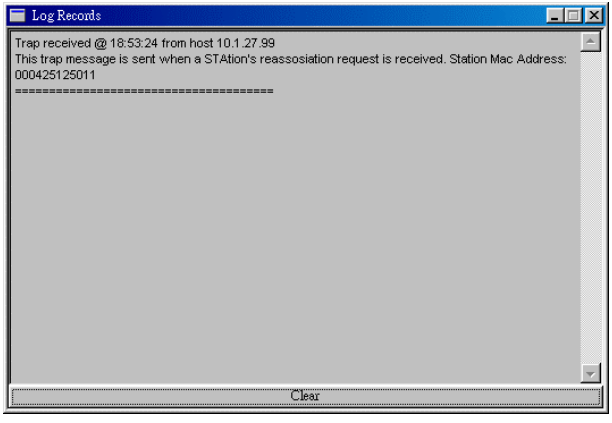
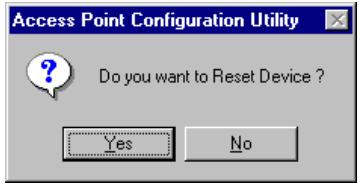

Log Records
Trap received @ 18:53:24 from host 10.1.27.99
This trap message is sent when a STAtion's reassosiation request is received. Station Mac Address: 000425125011
==========
Clear

Figure 4-14 View Log Records Window

Commands Menu

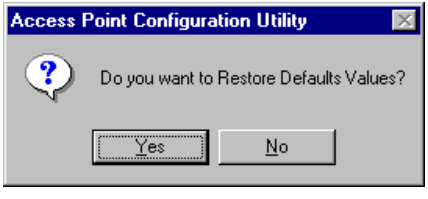
Reset Access Point

You can reset the Access Point. After you make configuration changes, you can reset the device to initiate the changes. Selecting this submenu will display the window as opposite. Click **Yes** if you want to reset the Access Point.



Restore Defaults

Allows you to restore the factory default values of the Access Point. For default values of the AP, refer to “Access Point Default Settings” on page 17. Selecting this submenu will display the window as blow. Click **Yes** if you want to restore the default values.



Firmware Upgrade

This window shows the current/upgrade firmware version and allows you to upgrade the firmware of the Access Point. For newer version of firmware, check our website for information about upgrades.

When you have downloaded the required firmware file, click the Browse (three dots) button to locate the appropriate file (e.g. bridge-rtw020-v1d4gd6.rom). Then click the **Download Image** button to download the firmware. The firmware download procedure will be completed successfully if a "Transfer Completed" message appears in the status bar.

If you receive the message "Timed Out" in the status bar during the firmware download procedure, it means that the download procedure fails. You have to repeat the firmware download procedure again for upgrading firmware.

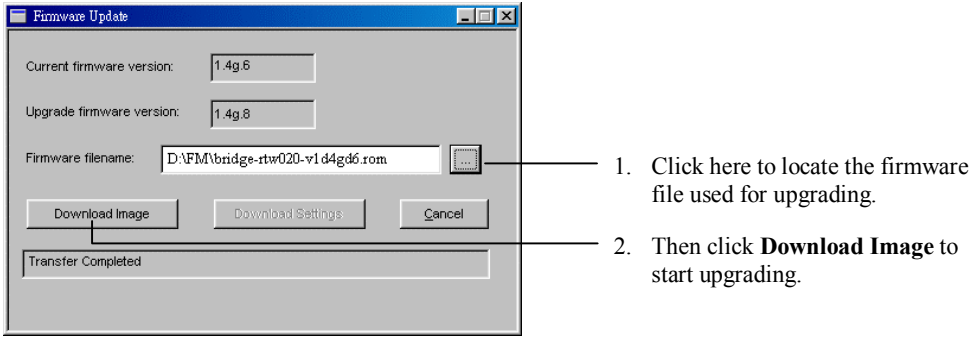


Figure 4-15 Firmware Upgrade Window

Window Menu

This menu allows you to change the way each window displays.

Cascade

All opened windows are arranged on the desktop in a cascade fashion.

Tile

All open windows are visible on the desktop.

Help

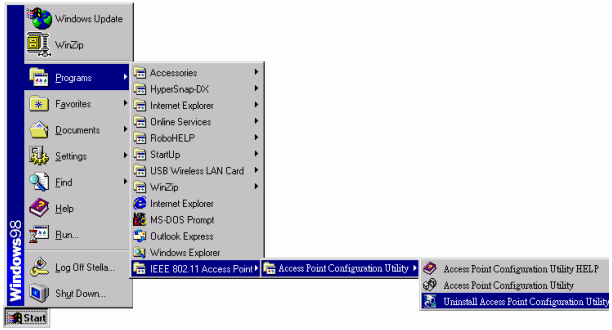
Help provides on line help about the utility.

Chapter 5 Uninstalling the Access Point Configuration Utility

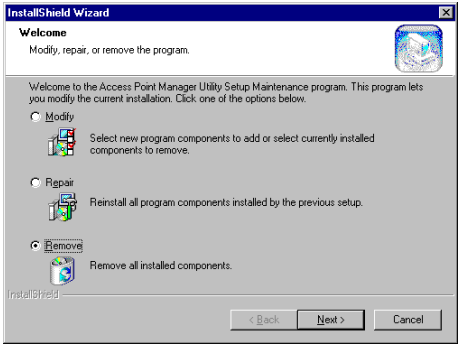
Uninstalling the Access Point Configuration Utility

If you need to uninstall the Access Point Configuration Utility for any reason, complete the following steps:

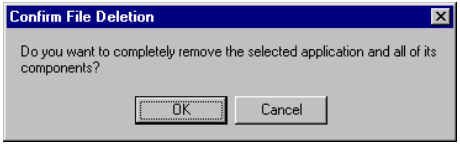
1. Close all programs that are currently running.
2. Click the Windows **Start** button, point to **Programs, IEEE 802.11 Access Point** and then click **Uninstall Access Point Configuration Utility**.



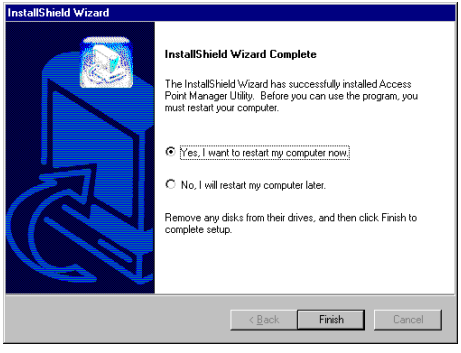
3. Select **Remove** option to uninstall the Access Point Configuration Utility, then Click **Next** to continue.


InstallShield Wizard
Welcome
Modify, repair, or remove the program.
Welcome to the Access Point Manager Utility Setup Maintenance program. This program lets you modify the current installation. Click one of the options below.
Modify
Select new program components to add or select currently installed components to remove.
Repair
Reinstall all program components installed by the previous setup.
Remove
Remove all installed components.
InstallShield
< Back
Next >
Cancel

4. Click **OK** to proceed with the uninstallation procedure.

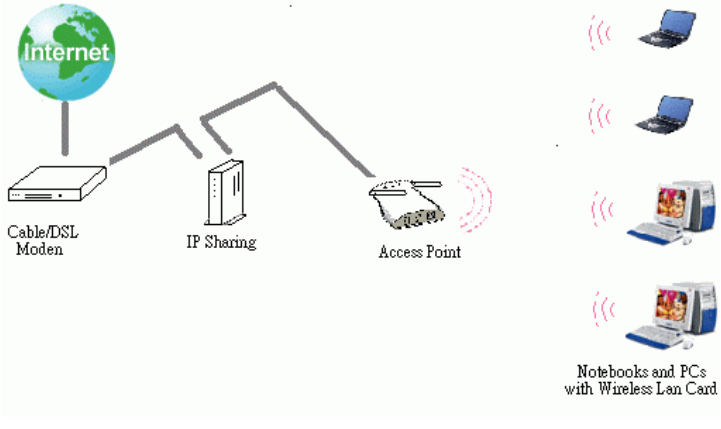


5. When the uninstallation is completed, click **Finish** to restart the computer.

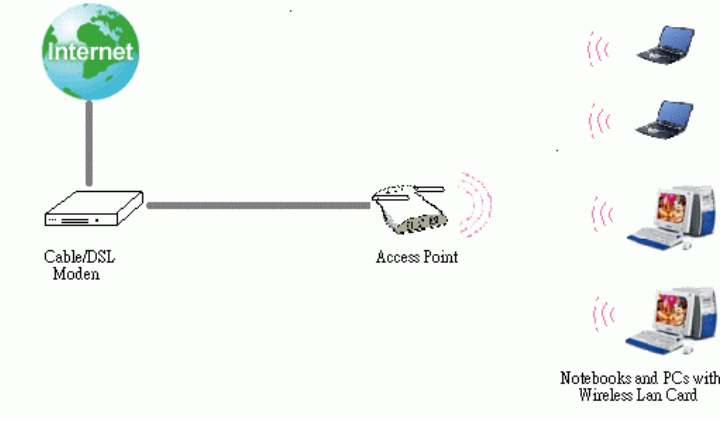

InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Access Point Manager Utility. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

Chapter 6 Application of the Access point (Access Point Mode Only)

Case 1: Home Network with IP Sharing Device and Access Point.

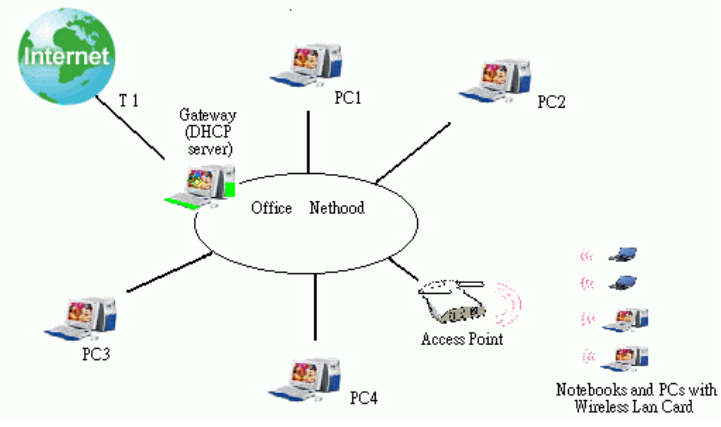


Case 2: Home Network with Access Point.



Note: Notebooks and PCs' IP must be supplied by **ISP**.

Case 3: Office Network with Ethernet and Access Point.



Chapter 7 Troubleshooting

Cannot Establish Wireless Link to Access Point

If you cannot establish an association with the Access Point:

- Make sure the power to the Access Point is connected and turned on (LEDs will light on the Access Point).
- Make sure the Access Point and wireless clients are configured with the same SSID.
- Make sure the Wired Equivalent Privacy is correctly configured for both Access Point and your wireless LAN card.

Note: For some cards, only Open-key can be selected as authentication algorithm!

- Reboot the Access Point if necessary.

Cannot Connect to Another Wireless Client via Access Point

If you cannot make a connection to another wireless client from your computer, it could be due to one of the following reasons:

- Incorrect SSID. Make sure the SSID is the same for all wireless clients.
- Incorrect IP Address or Subnet Mask. Check if you have a valid IP address by `ipconfig` (WinNT/2000) or `winipcfg` (Win98) command.
- Restart your computer if necessary.

Appendix A Specifications

Software

Standards Compliance	•	IEEE 802.11b Standard
	•	IEEE 802.3 Standard
	•	USB 1.1 Compliant
Operation Modes	•	Access Point
	•	Access Point Client
	•	Wireless Bridge (Building-to-Building)
Roaming	•	Seamless roaming within the 802.11b wireless LAN infrastructure
Bridging Features	•	Support self-learning transparent bridge specified in IEEE 802.1d between wired LAN and Wireless LAN

	• Support up to 512 MAC learning address • Automatic Learning Process • Forwarding Process • Aging Function • Filtering Database • Protocol Filtering
Security Features	• Support ESSID network identification for security • Support 64-bit and 128-bit WEP Data Encryption and Decryption • Support Authentication: Open System, Shared Key and Both • Support Wireless Access Control • Support SSID broadcasting

Configuration and Management	• SNMP agent with support for MIB-II and IEEE 802.11 MIB • Using TFTP to upgrade firmware or configuration setting • Support DHCP Client function to obtain an IP configuration from DHCP Server • Support default gateway setting for remote management purpose • Assign a temporary IP Address to the Access Point via *arp and ping* procedure • Provide two level of community authority for managing Access Point • Hardware modules for Ethernet statistics and Wireless statistics gathering • Reliable and robust host management utilities for managing Access Points and their characteristics through LAN port (Ethernet & Wireless) • Clear LED Indicators for real time monitor current network status
Driver and Utility	• SNMP Management utility running on Windows 98(SE)/ME/2000 platforms

Hardware

Interface	• One 2.4GHz RF interface for Wireless LAN connection • One RJ-45 port for 10Base-T Ethernet LAN connection
Radio Characteristics	• Frequency Band: 2.400 ~ 2.4835 GHz ISM Band (subject to local regulations) • Spreading: Direct Sequence Spread Spectrum • Modulation ➢ *CCK: 11Mbps and 5.5Mbps* ➢ *DQPSK: 2Mbps* ➢ *DBPSK: 1Mbps* • Number of Channels ➢ *11 Channels (US, Canada)* ➢ *13 Channels (Europe)* ➢ *14 Channels (Japan)* • Data Rate: 11Mbps / 5.5Mbps / 2Mbps / 1Mbps • Antenna: Dual external antenna supporting diversity

Radio Characteristics	• Transmit Power: 18dBm (typical) • Receiver Sensitivity: -82dBm @ FER < 8% • Range Coverage ➢ *Open Space: 700m – 900m* ➢ *Indoor: 30m – 150m*
Power Requirement and Operation Environment Requirement	• Power Adapter: ➢ *AC Input: 100V~240V / 50Hz~60Hz* ➢ *DC Output: 3.3V/4.0A, 5V/2.8A* • Temperature ➢ *Operating Temperature: 0°C to 55°C (32°F to 131°F)* ➢ *Storage Temperature: -20°C to 80°C* • Humidity: 5% to 95% (non-condensing) • Power Consumption ➢ *Rx: 780mA* ➢ *Tx: 1.2A*
LED Indicators (from left to right in front panel)	• RF Activity (Green) • Power (Red) • Ethernet Link (Green)

Physical	• **PCB Dimensions**: 116.77 mm (L) × 75.47 mm (W) • **Front Panel**: contain three LED indicators
Safety and Regulatory Approvals	• FCC • VCCI • CE • TELEC & JATE

* Specifications are subject to change without notice..

Appendix B Glossary

10BaseT	The unshielded twisted pair (UTP) cable used as 10 Mbps Ethernet media.
Access Point	An internetworking device that transparently bridges wired and wireless networks. Multiple Access Points together with its wired system create a seamlessly roaming environment among cells called Basic Service Areas.
Ad Hoc	A network composed solely of stations within mutual communication distances of one another without any presence of Access Points.
BSS	*Basic Service Set*. A set of stations controlled by a single coordination function within one basic service area.
Channel	An independent medium used to transmit and receive communication signals.
ESS	*Extended Service Set*. A wider service set that is extended by connecting one or more Basic Service Sets (BSSs) with an infrastructure.
Ethernet	The most widely used network, which transmits at 10/100Mbps using CSMA/CD as its media access control protocol.
Gateway	A network component that acts as an entrance to another network.

IEEE 802.11b One of the LAN specifications defined by the Institute of Electrical and Electronic Engineers (IEEE). The 802.11b standard defines how the wireless LAN works and on what frequency it operates.

Infrastructure A backbone to extend the service provided by wireless network.

IP *Internet Protocol*. The standard protocol within TCP/IP that defines the basic unit of information passing by breaking down data messages into packets, routing and transporting the packets over network connections, then reassembling the packets at their destination. IP corresponds to the network layer in the ISO/OSI model.

IP Address An IP address is a 32-bit (IPv4) number that uniquely identifies every device on the IP network. An IP address has two parts: the identifier of a particular network on the Internet and an identifier of the particular device within that network.

ISP *Internet Service Provider*. An organization that provides the access to the Internet, the most pervasive IP network all over the world.

LAN *Local Area Network*: A network that operates in a small geographical area.

MAC Address *Media Access Code Address*. A unique, 48-bit number assigned to every network interface card by the manufacturer.

NAT *Network Address Translation*. The translation of many IP addresses on one network into one IP address on another network.

SSID *Service Set Identity*. A group name shared by all members of an IEEE 802.11b wireless network. Only wireless devices with the same SSID are allowed to establish connections.

Subnet Mask A value used to check if the destination of your IP packets is located within the same IP domain. If not, those packets will be sent to a network device called Gateway. A class C IP network has subnet mask that has the same first three components (e.g. 255.255.255.0).

WEP *Wired Equivalent Privacy*. The optional cryptographic algorithm specified by IEEE 802.11b to provide data confidentiality that is subjectively equivalent to the confidentiality of a wired LAN that does not employ cryptographic techniques to enhance privacy.

Appendix C Regulatory Compliance

FCC Compliance Statement

This device has been tested and found to comply with the requirements of FCC Part 15 Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Rules and Regulations - Part 15C

Warning: This equipment has been tested and found to comply with the limits for Part 15C of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in residential area is likely to cause harmful interference in which case the user will be required to correct the interference at this own expense.

However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Screw Template

To mount the Access Point, print out this template to help you drill holes in correct position.